Claims:

1. A lead-free solder alloy comprising 1.0 - 5.0 wt% Ag, 0.01 - 0.5 wt% Ni, at least one of (a) 0.001 - 0.05 wt% Co and (b) at least one of P, Ge, and Ga in a total amount of 0.001 - 0.05 wt%, and a remainder of Sn.

2. A lead-free solder alloy as claimed in claim 1 which comprises 1.0 - 5.0 wt% Ag, 0.01 - 0.5 wt% Ni, 0.001 - 0.05 wt% Co, and a remainder of Sn.

3. A lead-free solder alloy as claimed in claim 1 which comprises 1.0 - 5.0 wt% Ag, 0.01 - 0.5 wt% Ni, at least one of P, Ge, and Ga in a total amount of 0.001 - 0.05 wt%, and a remainder of Sn.

4. A lead-free solder alloy as claimed in claim 1 which comprises 1.0 - 5.0 wt% Ag, 0.01 - 0.5 wt% Ni, 0.001 - 0.05 wt% Co, at least one of P, Ge, and Ga in a total amount of 0.001 - 0.05 wt%, and a remainder of Sn.

5. A solder ball formed from the alloy of claim 1.

6. A solder paste comprising a solder powder of the alloy according to claim 1 mixed with a flux.

7. A solder bump formed from the alloy of claim 1.

8. An electronic part having a plurality of solder bumps formed from the alloy of claim 1.

9. A method of joining two members comprising a step of forming a soldered joint using the alloy of claim 1.